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Lithologic-paleogeographic characteristics of the Bobrikovskian sedimentation stage in the Orenburg region

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Abstract

Terrigenous beds of the Bobrikivskian horizon are among the principal production facilities in the Orenburg region. Diverse views on the formation environments of the deposits testify to the complex structure of the study object and emphasize the actuality of the current research. The paper deals with the structure, composition and formation environments of the Bobrikovskian horizon in the Orenburg region. Complex sedimentological examinations of the core material from the prospect-appraisal and exploratory wells have been made. Formation settings of the Bobrikovskian horizon have been reconstructed, a paleogeographic chart has been developed. Productive strata are peculiar for non-uniform structure, which is mostly controlled by the bed genesis. Aleurite-sandy and clayey rocks were formed either in the marine basin zones with active hydrodynamics of the sedimentation environment (coastal-marine, shallow-water marine facies of the near and the far zones), or in an accumulative alluvial-deltaic plain. At that, the principal sedimentation regulator consisted of the environment itself and the unstable sedimentation processes against the background of the basin general gradual subsidence in the Early Visean. Those fast-acting factors account for the frequent facies conversions of the aleurite-sandy rocks into clayey ones and for the lenticular- discontinuous structure of the strata, considerably complicating exploration and development of the hydrocarbon deposits. Peculiarities of the area tectonic structure and development, paleorelief of the bottom and the evolution character of the sedimentation basin have predestined development of a particular type of the Bobrikovskian horizon section within the specified facies-paleogeographic zones in the southeast of the Volga-Ural anteclise. Promising explorations are associated with the sections represented by alternating sandstones, aleurolites and argillites peculiar for higher contents of sandy material (up to 70%) and confined to the deltaic and coastalmarine facies-paleogeographic zones. Those may result in discoveries of hydrocarbon pools in non-structural and combined traps.

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Keywords

Bobrikovskian horizon, Facies, Lithological composition, Sedimentation environments

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